

Work Order ID 77311

77311

Page 1

December-02-11 9:59:33 AM

Item ID: D105-674-011G

Accept

N9000040100

Setup Start ***NS1***

Revision ID:

Item Name: Skidtube, Grey

Stop ***NS2***

Start Date: 02/12/2011 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 16/12/2011 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: MLJ Date: 11/12/02 Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D2966	Rev A2

100

100

DC

Document Control

DOCUMENT CONTROL

Memo

Photocopy bluefile & type labels per PPP D105-674-011G

0.00

0.00

CHG002

Sc 26/13

MLJ 12-1-13
(0)

120

120

CNC Bend 1

CNC Delta 100 Bender

BENDING MACHINE - SKIDTUBES

Memo

~~Bend tube as per program BO105 on CNC Bender and Dwg D2966 as per folio 1, use DT9631 bending aid~~

0.00

0.00

N/A DP 11-12-12

77311

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130

0.00

130

Skidtubes

Skidtubes

Skidtubes

Memo: Pull D2966-1.00 Bents DP 11-12-12
~~1-Cut Fwd end of the tube using DT8185-1~~
 2-Cut Aft end at 107.06" using DT8185D N/A
 3-Deburr ends ✓
 4-Drill Aft Cap holes using DT8678
 5-Locate DT8679 with 1/8 clecos in Aft Cap holes. Ensure DT8679 is centered on Fwd end of tube and drill #40 Fwd bushing.
 6-Clamp DT8679 to the tube. Drill all #30 wearplate and crossbolt holes.
 7-Open Aft Cap holes using #6 drill
 8-Open wearplate holes and two side holes to Ø19/64" (0.297") as per Dwg D2966-1.
 9-Deburr holes.
 10-Open remaining (16) crossbolt holes to Ø0.500

140

0.00

140

Skidtubes

Skidtubes

Skidtubes

Memo
 1-Weld Fwd Cap as per Dwg D2966 and QSI 004. Fill #40 Fwd cleco hole.
 2-Grind Fwd Cap welds flush
 AIR M 119785

DP 12-1-4

12-1-4

1 0 BE12-01-04

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Required Date: 16/12/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

QC10- Inspect visual per QSI004- ground welds

0.00

150

QC

Memo

0.00

Quality Control

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

170

Chemical Conversion Coat per QSI005 4.1

0.00

170

HandFinish

Memo

0.00

Hand Finishing

D SAA 12-01-05

W/O:		WORK ORDER CHANGES					
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1

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1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

QC3- Inspect Part Finish

0.00

180

QC

Memo

0.00

Quality Control

1 0 2012-01-05

190

Skidtubes

0.00

190

Skidtubes

Memo

0.00

Skidtubes

1-Open crossbolt holes to finish size as per Dwg D2966
2-Open 14 holes to Ø0.750" & 2 holes to Ø0.875", countersink crossbolt holes & remove alodine to prepare for welding as per Dwg D2966
3-Deburr holes inside & outside, blow out chips

① B 12/01/05

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Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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200

0.00

200

Skidtubes

Skidtubes

Memo

0.00

1-Bond Web in place per QSI 015. (Ensure holes line up)

Pick:

A/R Sikaflex-291 batch: 119508Sikaflex expiry date: 12/08/13start time: 2:30end time: 12-01-09 2:00

2-Weld Crossbolt Spacers as per Dwg D2966 and QSI 004. For crossbolt spacer, weld one side, pass 5/8" drill; weld other side, pass 5/8" drill.

Pick:

A/R Aluminum Rod batch: M119785

3-Pass Ø0.630" drill to remove spillover for D2973 crossbolt. Pass Ø0.750" drill to remove spillover for D2971 crossbolt.

4-Grind welds flush as per Dwg D2966

210

QC10- Inspect visual per QSI004- ground welds

0.00

210

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
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1

Cust Item ID:

Required Date: 16/12/2011 Req'd Qty: 1.00

1

Customer:

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

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Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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220 QC5- Inspect part completeness to step on W/O

0.00

220

QC

Memo

0.00

Quality Control

225 Chemical Conversion Coat per QSI005 4.1

0.00

225

HandFinish

Memo

0.00

Hand Finishing

230 Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3

0.00

230

Powdercoat

Memo

0.00

Powder Coating

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

1:15
3200F
1:45

1X8M-12/01/10

1X8M-12/01/11

M 118486

W/O:		WORK ORDER CHANGES					
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1

Customer:

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Stop ***NR2***

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240 QC3- Inspect Part Finish

0.00

240

QC

Memo

0.00

Quality Control

1 BL 12-1-12.

250

0.00

250

HandFinish

HandFinishing

Memo

0.00

Hand Finishing

1-Inspect for foreign objects as per QSI 024

2-Install Inserts, Wearplate and Cap per Dwg D2966. Insert a drop of sikaflex at insert holes before installing wearplates. Seal Aft Cap using Sikaflex. Install bushing and nut. By looking Fwd, install nut to right hand side.

Pick:

QtyPart NumberDescriptionBatch

A/RSikaflex-291

Sikaflex expiry date:

3-Wing Walk as per Dwg D2966 and QSI 005 4.4

Batch:

1 BL 12-1-12.

119443
12-1

119074

W/O:		WORK ORDER CHANGES					
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1

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1

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Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

260

QC3- Inspect Part Finish

0.00

260

QC

Memo

0.00

Quality Control

270

QC5- Inspect part completeness to step on W/O

0.00

270

QC

Memo

0.00

Quality Control

*****ENSURE INSERT ARE AT LOCATION (6) AS PER DWG
D2966*****

280

Pick Kit

0.00

280

Packaging

Memo

0.00

Packaging

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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290 QC4- 100% Inspect kits for completeness

0.00

290

QC

Memo

0.00

Quality Control

300

0.00

300

Packaging

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D105-674-011G

Location: _____

0.00

Rev A

310

QC21- Final Inspection - Work Order Release

0.00

310

QC

Memo

0.00

Quality Control

(XL)

SP 12-01-13

12/11/16

MF 12-01-13

W/O:		WORK ORDER CHANGES					
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Picklist Print

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Parent Item: D105-674-011G

D105-674-011G

Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A04.07.07New IssueKJ/JLM
seq110 DD verf:EC

IPP Rev:B 10.06.09 remove

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2962-125 *D2962-125* Outer Tube Extrusion		Manufactured	No			120	Each	23.0000	1	1			
										**	SAD 11-12-12		
											①		
D2964		Manufactured	No			140	Each	32.0000	1	1			
										**	BE 12-01-04		
D2976		Manufactured	No			200	Each	0.0000	1	1			
										**	① B 12/01/05		
D2971		Manufactured	No			200	Each	38.0000	1	1			
										**	BE 12-01-09		

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

D2973 Manufactured No

200 Each

76.0000

7 7

D2973

Cross Bolt Spacer

**

BR 12-01-09

Location

Loc Qty

Loc Code

LG002

76

14636

76

7

D2965 Manufactured No

250 Each

28.0000

1 1

D2965

Cap, 105 Skidtube

**

BR 12-1-12

Location

Loc Qty

Loc Code

FP001

2

77299

2

FP002

26

71371

26

1.

D2970-1 Manufactured No

250 Each

11.0000

1 1

D2970-1

Wearplate

**

BR 12-1-12

Location

Loc Qty

Loc Code

FP016

11

48213 ✓

11

1

D2970-3 Manufactured No

250 Each

9.0000

1 1

D2970-3

Wearplate

**

BR 12-1-12

Location

Loc Qty

Loc Code

FP020

9

48214 ✓

9

1

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Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3176-1 Manufactured No

250 Each

14.0000

1 1

D3176-1

Bushing

**

BR 12-1-12

Location

Loc Qty

Loc Code

ST039

14

37586 ✓

14

D3176-3 Manufactured No

250 Each

17.0000

1 1

D3176-3

Nut

**

BR 12-1-12

Location

Loc Qty

Loc Code

ST039

17

44896 ✓

17

ALS7-1032-130 Purchased No

250 Each

1,793.000

36 36

AI S7-1032-130

Insert

**

BR 12-1-12

* ALS4-1032-130.

Location

Loc Qty

Loc Code

ST280

392

117717

27

118966

86

119775

279

ST281

221

119794

221

ST282

1180

119530

1180

36.

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Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-08

Purchased

No

250

Each

1,585.000

26

26

MS27039-1-08

Screw

**

BR12-1-12.

Location

Loc Qty

Loc Code

ST291

1585

117423

101

118378

84

118910 ✓

400

119075

500

119109

500

26.

AN960JD10L

*NAS1149D0332J ✓ Purchased

No

250

Each

0.0000

28

28

*AN960.ID10I *

Washer

119042.

**

28 BR12-1-12.

MS27039-1-09

Purchased

No

250

Each

463.0000

2

2

MS27039-1-09

Screw

**

BR12-1-12.

Location

Loc Qty

Loc Code

FP-B

169

18057 ✓

169

ST291

294

111650

294

2.

D2972

Manufactured

No

290

Each

75.0000

6

6

D2972

Bushing

**

12/1/13

Location

Loc Qty

Loc Code

ST028

75

33544

44

44160

31

6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 5

December-02-11 9:59:38 AM

Work Order ID: 77311

77311

Parent Item: D105-674-011G

D105-674-011G

Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

D2974

Manufactured No

290 Each

45.0000

1

**

D2974

Packer

Location

Loc Qty

Loc Code

ST028

45

71997

45

Manufactured No

290 Each

14.0000

2

**

D2975

D2975

Wearshoe

Location

Loc Qty

Loc Code

ST497A

14

69079

3

74721

11

Purchased No

290 Each

184.0000

3

**

AN4-51A

AN4-51A

Bolt

Location

Loc Qty

Loc Code

ST361

184

~~118706~~

50

119127

50

119798

84

Purchased No

290 Each

0.0000

8

**

AN960JD10L

NAS1149D0332J

*AN960JD10L *

Washer

8

1119042

12/1/13

December-02-11 9:59:38 AM

Shop Packet Print

Page 5

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Picklist Print

December-02-11 9:59:38 AM

Work Order ID: 77311

77311

Parent Item: D105-674-011G

D105-674-011G

Parent Item Name: Skidtube, Grey

Start Date: 02/12/2011

Required Date: 16/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L4

Purchased

No

290

Each

10,398.00

3

3

MS21042L 4

Nut

**

Location

Loc Qty

Loc Code

ST300

531

117441

51

117601

347

118451

133

ST516

4867

119017

4867

ST518

5000

119075

5000

MS27039-1-08

Purchased

No

290

Each

1,585.000

8

8

MS27039-1-08

Screw

**

Location

Loc Qty

Loc Code

ST291

1585

117423

101

118378

84

118910

400

119075

500

119109

500

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN RF	DRAWN BY RF	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D2966	REV. A SHEET 1 OF 2
DATE 00.03.08		TITLE BO 105 SKIDTUBE ASSEMBLY SCALE NTS	
A	00.03.08	NEW ISSUE	

RELEASED
00.05.11 [Signature]

Qty	Part Number	Description
X	D2966-041	SKIDTUBE ASSEMBLY
1	D2962-125	EXTRUSION
1	D2964	CAP
1	D2965	CAP
1	D2970-1	WEARPLATE
1	D2970-3	WEARPLATE
1	D2971	CROSS BOLT SPACER
7	D2973	CROSS BOLT SPACER
1	D2976	WEB
36	ALS7-1032-130 or ALS4-1032-130 or AKS7-1032-130 or AKS4-1032-130	INSERT
28	AN960JD10L	WASHER
26	MS27039-1-08	SCREW
2	MS27039-1-09	SCREW
1	D3176-1	BUSHING
1	D3176-3	NUT

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 77311

M.L.S

11/12/02



GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) WELDING TO BE DONE PER DART QSI 004.
- 3) INSERT D2976 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015 AFTER BENDING.
- 4) USE DART DRILL TEMPLATE DT8451 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION B-B (34 PLACES) AFTER FINISH. SEAL WEARPLATE SCREWS WITH SIKAFLEX-241/-291.
- 5) DO NOT INSTALL MS27039-1-08 SCREWS AND AN960JD10L WASHERS IN THESE LOCATIONS.
- 6) INSTALL ALS7-1032-130 INSERT, MS27039-1-08 SCREW, AND AN960JD10L WASHER IN 2 PLACES THIS LOCATION BEFORE POWDER COATING.
- 7) FINISH:

ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2976 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.4) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.00 ABOVE CENTER LINE PER DART
QSI 005 4.4 (OPTIONAL) BLACK SANDTEX (REF 4.3.5.7)



01.01.29
CP 01.01.30

A2	02.10.30	ADD D3176-1/-3	[Signature]
A1	01.01.29	CHANGE COLOR TO BLACK SANDTEX	[Signature]

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

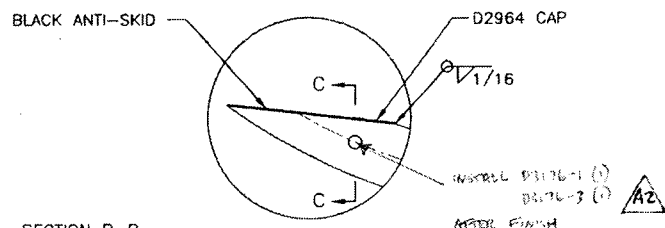
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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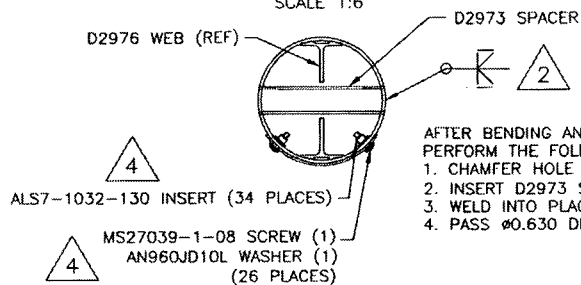
NOTE: Date & initial all entries

77311

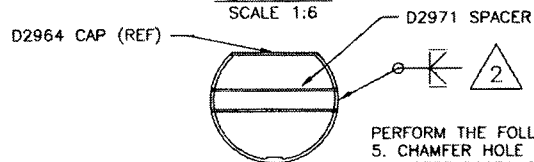
DETAIL A
SCALE 1:3



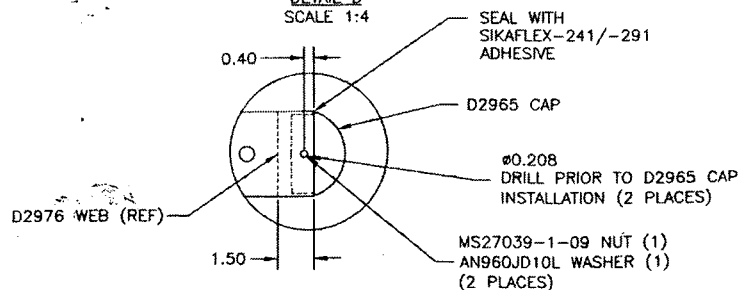
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SCALE 1:6



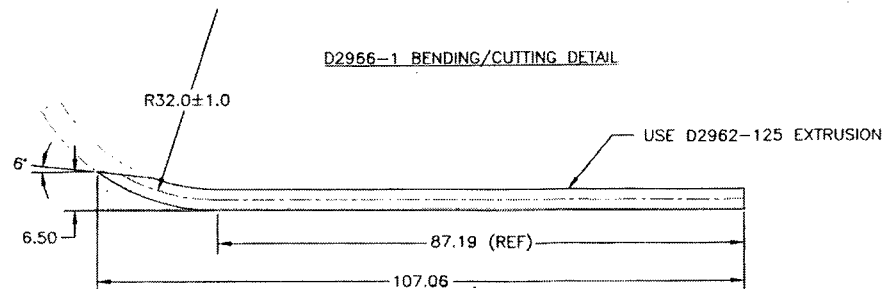
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SCALE 1:6



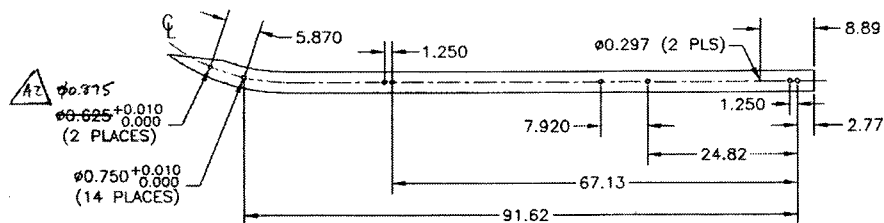
DETAIL D
SCALE 1:4



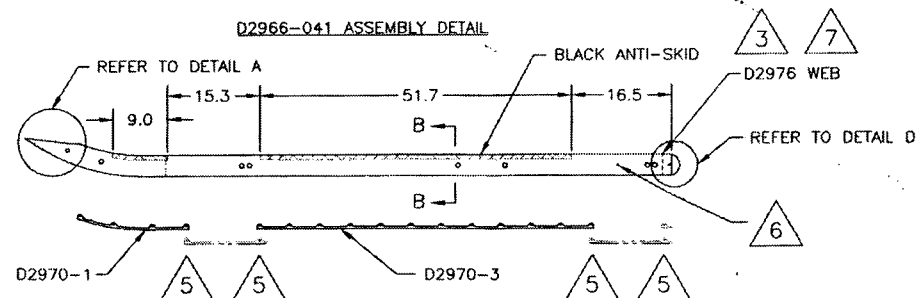
D2966-1 BENDING/CUTTING DETAIL



D2966-1 DRILLING DETAIL



D2966-041 ASSEMBLY DETAIL



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DATE 00.03.08		DRAWING NO. D2966		SHEET 2 OF 2
		TITLE BO 105 SKIDTUBE ASSEMBLY		SCALE 1:20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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NOTE: Date & initial all entries

NO. 259

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: B68574
Part number: D105-674-0110
Description: 105
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Sal Dunn Date of Test Coupon 11-06-30

Welder Barclay Elliott Date of Test Coupon 11-06-30

The above named individual is qualified in accordance with AWS D17.1.2001 to weld